



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

*Executive Office*

November 22, 2016

Chairman Pedro Nava  
The Little Hoover Commission  
925 L Street, Suite 805  
Sacramento, CA 95814

Re: Little Hoover Commission Hearing on "Special Districts" held October 27, 2016

Dear Chairman Nava:

On behalf of The Metropolitan Water District of Southern California (Metropolitan), I wish to submit the following comments and background information for the Commission's review of climate change adaptation efforts by California special districts. I provided oral comments to the Commission during the October 27, 2016, public comment period.

As stated in Metropolitan's letter to the Commission dated September 9, 2016 and as follow-up to the Commission's August 25 hearing, most special districts in California have been created over time for local control over specific local services. Metropolitan, in many respects, runs contrary to that tradition. The district was created for a regional purpose – to import water supplies for a growing region – that began during the Great Depression and continues to evolve to this day.

As the Little Hoover Commission revisits the organization and governance of special districts in California, it is important to keep in mind that Metropolitan is a critical institution as it serves as the largest regional water distributor and planner of its kind in the state and nation. As the wholesale water provider to its 26 member public agencies, Metropolitan's efforts, investments and actions in climate change adaptation provide coverage and water supply resiliency for the 19 million residents and the vibrant economy within its 5,200 square mile service area.

#### Background

Metropolitan is a special district authorized under state law to develop, store and distribute water for domestic and municipal purposes, and to provide, generate and deliver electric

power to do so. Metropolitan's 26 member agencies either directly or through retail water purveyors within their own service areas, provide water to the 19 million people in Metropolitan's six-county 5,200 square mile service area. In round figures, Metropolitan develops and supplies nearly half of the total water supply used in its Southern California service area.

Sources of water for Southern California are diversified as a result of decades of collaborative planning and development through the region's Integrated Water Resources Plan (IRP). Locally, water supplies are comprised of groundwater, surface supplies, recycled water, desalination and storm water capture. The region has three major imported supply systems: the Los Angeles aqueducts, owned and operated by the City of Los Angeles, one of our member agencies; the Colorado River Aqueduct (CRA) owned and operated by Metropolitan; and the State Water Project (SWP), built by the State of California and paid for by the 29 State Water Contractors, of which Metropolitan holds the largest contract entitlement. Metropolitan has also invested in a large portfolio of groundwater and surface storage programs with the capacity to store roughly 1-1/2 years of water supply for the entire region.

As the regional wholesale water provider to its 26 member public agencies, Metropolitan's efforts, investments and actions in climate change adaptation provide coverage and water supply resiliency for the agencies, residents and businesses within its service area.

### The Threat of a Changing Climate

Climate change may prove to be the most significant challenge to water supply reliability for Southern California and to all of California. The potential outcomes of a changing climate may dramatically affect both water supplies and demands. The vast majority of Global Circulation Models, which comprehensively model the world's future climate, show increasing air temperatures in Metropolitan's Southern California service area and in Northern California, the Eastern Sierra and Colorado River watersheds. In these watersheds, the reduced snowpack that will result from warmer temperatures will lead to the loss of the natural water management that snowpack provides. Precipitation, more likely to be in the form of rainfall, will be flashier in intensity and intermittent in timing. Warmer temperatures in Southern California will increase water demands by increasing the water requirements for plant life and landscapes and will also increase evaporation rates in storage reservoirs. Reduced precipitation in Southern California and warming will also affect the natural recharge of groundwater and surface water resources.

The past ten years, and in particular, the unprecedented drought conditions of the past five years, have given us a glimpse of the water supply and demand challenges that climate change will pose. Local rainfall in Southern California has been sharply below normal for that period,

and our source waters have already experienced the range of higher temperatures and reduced snowpack that is being foreseen by climate change scientists.

The record conditions of temperature and precipitation in the recent drought have a severe impact on water supply reliability for Southern California and the rest of the state. It has not only posed challenges to local water supplies, it has also exposed that the state's water system, storage and conveyance facilities are inadequate with regard to managing the highly variable water supplies and conditions brought about by extreme changes in rain and snowpack.

While uncertainties remain regarding the exact timing, magnitude and regional impacts of these temperature and precipitation changes, researchers have identified several areas of concern for California's water resources. These include:

- Reduction in Sierra Nevada and Northern California snowpack;
- Reduction in runoff and river flow in the Colorado River Basin;
- Increased intensity and frequency of extreme weather events; and
- Rising sea level, resulting in:
  - Impacts to coastal groundwater basins due to seawater intrusion;
  - Increased risk of damage to property and infrastructure from storms, high-tide events and erosion of levees; and
  - Pumping curtailments on the SWP and federal Central Valley Project due to increased salinity.

Other important issues of concern due to global climate change include:

- Effects on local supplies such as groundwater;
- Changes in urban and agricultural demand levels and patterns;
- Impacts to human health from water-borne pathogens and water quality degradation;
- Declines in ecosystem health and function; and
- Alterations to power generation and pumping regimes.

#### Planning and Policy Actions to Prepare for Climate Change

As a major steward of Southern California's water supply resources, Metropolitan has been committed to increasing preparedness and facing the challenge of climate change for nearly two decades. In 2000, as the signs and the science began to shed light on climate change in California, Metropolitan convened a panel of leading climate change experts to gain a clearer perspective on the state of the science and on the potential impacts to California.

In 2002, Metropolitan's Board of Directors adopted a set of Climate Change Policy Principles that recognize the importance of incorporating potential climate change impacts in the planning and environmental review of water supply and infrastructure projects. A second expert panel on climate change was convened in 2007 to present and explain updated and improved findings and science from the climate change science community.

In that same year, Metropolitan positioned itself for climate change planning and adaptation by becoming one of the eight founding members of the Water Utility Climate Alliance (WUCA). Now consisting of ten of the largest water utilities in the United States, collectively serving over 40 million people, WUCA provides a collaborative avenue for knowledge sharing and research support on climate change. The ten water utilities in WUCA are Metropolitan, Denver Water, Southern Nevada Water Authority, City of New York, City of Portland, Tampa Bay Water, City of Seattle, City of San Francisco, Central Arizona Project and the San Diego County Water Authority. WUCA's mission is "Collaboratively Advancing Water Utility Climate Change Adaptation." To accomplish its mission, WUCA monitors and analyzes the development of climate change-related research, technology, programs and federal legislation. WUCA pursues collaborative opportunities and partnerships with water providers, climate scientists, federal agencies, research centers, academia and other key stakeholders. The member agencies of WUCA annually gather and share adaptation approaches, decision-support science and actions and strategies to mitigate greenhouse gas emissions.

Metropolitan's original 1996 IRP and subsequent updates in 2004, 2010 and 2015 have long recognized and moved the region towards comprehensive planning and adaptation for climate change impacts. Metropolitan's inaugural 1996 IRP set a regional resource development path that emphasized conservation, recycled water and water storage, all recognized today as cornerstone investments that increase resiliency to a changing climate. The 2004 IRP Update introduced a planning buffer to the resource planning framework to help the region become more prepared for uncertainties including climate change. The 2010 IRP Update expanded this into a supply buffer consisting of climate-proof conservation and local water recycling and added a Foundational Actions component to prepare additional future resources for implementation in response to the longer-term risks of climate change. In support of the 2010 IRP Update, Metropolitan collaborated with the RAND Corporation to adapt a first-of-its-kind complex uncertainty modeling technique to Metropolitan's IRP resource plan and included a suite of global climate model output to help examine the region's vulnerability to climate change. In addition to Metropolitan's own efforts in identifying and analyzing the risk of climate change, the district also participated in the US Bureau of Reclamation's 2012 Colorado River Basin Water Supply and Demand Study.

## Current and Future Investments that Increase Climate Change Resilience

Over the course of the past two decades, Metropolitan and its member agencies have made investments and water resource development actions that are making the Southern California region more resilient and adaptable to climate change. Metropolitan and its member agencies also continue to take steps to maintain and improve its distribution system to minimize energy use and to improve resiliency to climate change.

### *Water Conservation Programs*

Increased water use efficiency through the implementation of conservation programs is a baseline adaptation action that reduces the overall demands for water. Metropolitan is a state and national leader in the development and implementation of conservation savings programs. Over time, Metropolitan has made cumulative investments nearing a billion dollars towards conservation with annual savings nearing a million acre-feet per year. Metropolitan's member agencies have also invested local dollars into conservation programs.

All of Metropolitan's water conservation incentive programs save energy as well. From the water-energy nexus perspective, water saved reduces the embedded energy used within water distribution and treatment systems; while programs specifically targeting hot water use, appliances and industrial processes also save energy associated with the actual use of the water. Metropolitan collaborates on projects with Southern California Gas Company (SoCal Gas) including landscaping workshops, marketing of Metropolitan rebates through energy conservation kits, sharing collateral materials and joint speaking engagements. In December 2014, Metropolitan entered into a Memorandum of Understanding (MOU) that enables SoCal Gas to receive Metropolitan incentives for a high efficiency clothes washer (HECW) direct installation program targeting low-income customers. Metropolitan also collaborates with San Diego Gas and Electric (SDGE) in offering HECW rebates. In this case, SDGE adds its HECW incentive to Metropolitan's, and the combined incentives are disbursed by Metropolitan's regional program administrator to consumers in San Diego County.

Increased focus on outdoor water use efficiency with devices like improved irrigation controllers and programs like the Turf Removal program continue to further the decades of commitment to conservation.

### *Local Supplies*

For decades, Metropolitan and its member agencies have actively promoted efforts to conserve water and energy through its pioneering region-wide incentive programs in water conservation, water recycling and groundwater recovery. Over 600,000 acre-feet per year of these local supplies have been developed in Southern California. Some local supplies have lower energy

requirements and offset the need to develop additional imported supplies, which have historically been seen as more vulnerable to droughts and climate change.

### *Storage*

Metropolitan has invested billions of dollars in a large storage portfolio, including both surface reservoirs and groundwater storage. Storage is a critical resource in managing the flashiness of rain-driven precipitation events and water supply and helps to replace the loss of snowpack as a source of natural water storage. Storage also provides an advantage from an energy perspective. Metropolitan uses very little energy to store water in its internal storage programs. The primary sources of water are delivered by gravity flow into reservoirs and basins.

A good example of how investments in infrastructure and storage help climate change adaptation and mitigation is Metropolitan's Diamond Valley Lake in Riverside County. Diamond Valley Lake is an 800,000 acre-foot surface reservoir that Metropolitan ratepayers invested \$2 billion to construct. In order to maximize the efficiency of Diamond Valley Lake, Metropolitan invested an additional \$1 billion to build the large capacity Inland Feeder pipeline. The Inland Feeder has the ability to fill Diamond Valley Lake in a short period of time, all without requiring any pumping of water. When water is withdrawn from Diamond Valley Lake, it re-enters Metropolitan's distribution system without requiring additional energy and can produce energy by passing the withdrawn water through hydroelectric generators.

### *Distribution*

Metropolitan's distribution system was designed to maximize the use of gravity as its primary source of power. Metropolitan's major water supplies from the SWP and CRA are brought into the service area at high elevation. Very little pumping, and thus electricity use is needed to distribute treated and untreated water to its member agencies. Instead, gravity, not electricity, is primarily used as the power source to deliver water supplies through Metropolitan's distribution system.

### Investments to Reduce and Mitigate Metropolitan's Carbon Footprint

Metropolitan has long recognized the role of greenhouse gas emissions in the climate change arena and has taken many steps to reduce the carbon footprint of its operations. Metropolitan was one of the early responders in reporting its Greenhouse Gas Emissions (GHG) to California's Climate Registry. Actions that have been taken by Metropolitan to reduce its GHG emissions, such as the installation of solar power, as well as an overall effort to replace coal-fired power plants that supply power to the major water transportation systems, have resulted in a notable reduction in Metropolitan's GHG emissions over time.

Most water projects in California have been designed to minimize energy use and maximize energy recovery. Energy has always been a key factor in the development of Metropolitan's water supply infrastructure. Metropolitan continues to pursue energy efficiency in its facility operations and has developed extensive renewable energy facilities, both hydroelectric and solar, throughout its service area.

#### *Pipeline Hydroelectric Power Plants*

Metropolitan has 16 hydroelectric power plants that recover the energy from the water flowing through its pipelines. The plants have a generation output up to five times the total amount of energy needed by Metropolitan's facilities, including treatment plants, office buildings and small pumping plants not associated with the CRA. The production of energy by these plants does not produce GHG emissions and the energy is certified as renewable by the California Energy Commission. Metropolitan has continued to evaluate potential sites within its distribution system for new innovative in-line hydropower technologies to increase the renewable energy generated in the distribution system.

#### *Solar Power Facilities*

In 2009, Metropolitan installed a one megawatt photovoltaic power facility at the Skinner Water Treatment Plant, one of the largest water treatment plants in the United States. Solar power has replaced approximately 17 percent of the energy supplied to the Skinner Water Treatment Plant, power that was formerly purchased from California's electricity grid. In 2016, a three megawatt solar power facility was installed at the Weymouth Treatment Plant. Metropolitan's Board also authorized funding for the construction of one megawatt of solar generation at the Jensen Treatment Plant. These solar facilities are in addition to the half megawatt facility located at Metropolitan's Diamond Valley Lake Visitors' Center. Within Metropolitan's service area, the member agencies have also been aggressively developing solar power generation at their facilities.

#### *Hybrid Vehicles*

Metropolitan has a diverse fleet of vehicles to assist in the operation and maintenance of its water system that is spread over 5,200 square miles. Of the 156 sedans in the fleet, over 45 percent have been replaced with hybrid vehicles, greatly reducing the amount of gasoline consumed and the associated GHG emissions from the fleet.

#### *Colorado River Aqueduct Energy*

Metropolitan was one of the original contractors for energy from the Hoover Dam and paid one-half of the cost of the power plant at the Parker Dam on the Colorado River. Today, on

average, clean energy from the Hoover and Parker Dams make up over 70 percent of the energy used for delivering water through the Colorado River Aqueduct. Metropolitan and the other contractors for Hoover energy pay for the cost of operating, upgrading and maintaining the dam and power plant and have been working with the U.S. Bureau of Reclamation to modernize the equipment to increase energy production even as the elevation of Lake Mead has declined due to the multi-year drought on the Colorado River. Energy generated from hydropower operations at Hoover Dam offsets the amount of energy that Metropolitan and the other contractors would have to procure from other energy sources whose generation would likely have increased associated GHG emissions.

### *Other Actions*

Metropolitan has been taking proactive steps to track and reduce overall energy use and GHG emissions. This includes energy audits and upgrades at Metropolitan facilities, voluntary reporting of GHG emissions reporting to The Climate Registry and forming a Water Energy Nexus Team to engage in state and federal water-energy nexus proceedings. In 2010, Metropolitan completed an Energy Management and Reliability Study which established policies and strategies for reducing GHG emissions, increasing revenue and mitigating price volatility.

### *Future Adaptation Actions Needed for Climate Change Resilience*

The 2015 IRP Update continues to emphasize water conservation and local supply development as a key to future water supply reliability. However, Metropolitan's imported supply sources also need to have greater attention paid to adaptation to climate change impacts. On the Colorado River, interstate management actions and programs within the context of the Law of the River have been identified to increase resiliency to climate change. On the State Water Project, the current California water system is outdated and undersized with respect to conveyance and storage. Without improved and modernized conveyance and storage, the State Water Project is not equipped to manage the challenges that climate change will bring in the form of rising sea levels, associated salinity intrusion as well as the shift to a world of rain-dominated precipitation and loss of snowpack and the associated storage that snowpack had provided in the past. The water system improvements identified in the California Water Fix can vastly improve the climate change resiliency and adaptation of the State Water Project.



Thank you again for providing Metropolitan with the opportunity to provide further background into your hearing record. If you have any questions or require any additional information or follow-up, please contact Kathleen Cole in Metropolitan's Sacramento Office at (916) 650-2600.

Sincerely,

A handwritten signature in dark ink, appearing to be 'B. Goshi'.

Brandon J. Goshi  
Manager of Water Policy and Strategy  
Metropolitan Water District of Southern California

cc: Members of the Little Hoover Commission  
Carole D'Elia, Executive Director, Little Hoover Commission  
Jim Wasserman, Deputy Executive Director, Little Hoover Commission